UNITED STATES PATENT AND TRADEMARK OFFICE

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09/576,218	05/22/2000	Yong-Tae Jeong	P56085	2206

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

MAILED

Application Number: 09/576,218
Filing Date: May 22, 2000
Appellant(s): JEONG, YONG-TAE

MAR 1 8 2005

Technology Center 2600

Robert E. Bushnell
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 31, 2005.

(1)   Real Party of Interest

Party of interest contained in the brief is correct.

(2)   Related Appeals and Interferences

The statement of Related Appeals and Interferences contained in the brief is correct.

(3)   Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4)   Status of Amendments

The statement of status of amendments in the brief is correct.

(5)   Summary of Invention

Summary of Invention should be placed as "Summary of Claimed Subject Matter" in accordance with new rules 41.37(c), which effective on September 13, 2004.

(6)   Ground of Rejection to be reviewed on Appeal

The Ground of Rejection to be reviewed on Appeal contained in the brief is correct. Claims 14-37 are rejected under 35 U.S.C. 102 (b). This rejection is set forth in a prior Office Action, mailed on 7/1/04.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishii (JP 410116165A).

Regarding claim 14, Ishii discloses a method of reducing standby time **(a method for finding a lower standby printers in a printing system, Abstract and fig. 1)** for printing in a system of networked printers **(printers 20-22, fig. 1)** connected to at least one host computer **(i.e. printer server 30, fig. 1)**, the method comprising:

● the at least one host computer *(print server 30, fig. 1)* registering *(print server 30 registers plurality of printers 20-22, fig. 1, page 3 of English translation)* at least one item of network print information *(print server further includes a status information storing unit 306 for storing printer's information acquired and retrieved from plurality of printers as shown in fig. 8)* in at least one host computer;

● the at least one host computer accessing *(print server further includes a database retrieval unit 304 for acquiring and retrieving printer's information and such information is stored in storage device 306, fig. 6, par. 17, page 3)* accessing information of the printers that connected via **(a network 50, fig. 1, page 3)** the network printer information registered in the at least one

host computer in response to a command for printing print-data being issued *(a printing command issued by plurality of clients 10-13, fig. 1)*;

• the at least one host computer transmitting *(print server further includes a transmitting device 302 for transmitting a request to retrieve printer's information from plurality of printers via network 50, fig. 6, and such requests are performed periodically, par. 28, page 4)* a request command from the at least one host computer to the networked printers requesting the networked printers to transmit standby print information to the at least one host computer *(status information of plurality of printers as shown in fig. 8 and also see abstract and page 6)*, the standby print information relating to the amount of standby print operations *(printer standby time, abstract; NOTES: standby print information/operations is equivalent to the printers having "no print operations and/or a printer in waiting status" as described in originally filed specification, and please see fig. 8 of Ishii for more details)* of the respective networked printers;

• the at least one host computer determining a minimum-utilized networked printer *(printer with "waiting status" and/or having the least print operation performed on the printers as shown in fig. 8)* having a lowest amount of standby print operations from among the networked printers having standby print operations from the standby print information *(printer with "waiting status", that is, printers with a lowest amount of standby print operations, page 6)* transmitted from the networked printers to the at least one host computer in response to the request command; and

• the at least one host computer transmitting *(print server transmits the print data to the printer having the lowest standby time (lowest print operations), page 6)* the print-data from the at least one host computer to the network printer determined to be the minimum-utilized network printer. *PLEASE NOTE: Print server 30 (fig. 1) of Ishii and host computer (fig. 1) of applicant's invention are both having the same features (i.e. storage device, controller, transmitter, detector, receiving) and both performing the same functions (i.e. selecting and determining which plurality of printers having the lowest standby print operations); herein, the examiner interprets "print server" as a "host computer" cited by an applicant. Please refer to "Response to Arguments" for more details.*

Regarding claim 15, Ishii further discloses the method of claim 14, wherein registering at least one item of network print information in at least one host computer comprises: determining *(database retrieval device 304 for acquiring and retrieving printer's information from plurality of printers that to the print server connected via network 50, and inherently, these printers must connected and registered with the print server in order for database retrieval 304 to successfully retrieved these information, i.e. an example is shown in fig. 8 includes IP address of registered printers)* whether a command for registering network printer information in the at least one host computer has been issued; detecting *(print server further includes database retrieval device 304 for detecting, page 4)* the network printers connected to the network; and storing *(print server further includes status information storing unit 306 for storing printer's information retrieved by device 304)* the network printer information in a memory of the at least one host computer.

Regarding claim 16, Ishii further discloses the method of claim 15, further comprising assigning priority numbers to the network printer information in order of detection and storing the assigning priority numbers *(report as shown in fig. 8 shows priority number (left column) in which the printers have been detected and retrieved, and the printers with the least printed operation (i.e. printers 2-3) is selected for printing the next incoming print job because it is in the "waiting" state)* in the memory.

Regarding claim 17, Ishii further discloses the method of claim 16, wherein determining a minimum-utilized networked printer comprises: detecting *(database retrieval device 304 retrieves and assigns priority number as shown in left column, fig. 8)* the priority numbers assigned to the networked printers having the lowest amounts of standby print operations *(print server further includes a control mechanism 303 for assigning the print data to the printer with waiting status, that is, printer with no print operations and available (no errors) to print the next incoming print job, page 6, fig. 8, for example, an incoming print job will be assigned to printers 2-3 (waiting status) rather than printer 1 (busy status) to enhance and reduce the waiting time of incoming print job)*; and selecting *(selection of the lowest standby printer is*

automatically performed via a control mechanism 303 incorporated within the print server without the users/operators interface, and inherently, these operations can also be performed manually via a keyboard, control panel, and or etc) a networked printer having a preferential priority number as the minimum-utilized network printer.

Regarding claims 18-20, Ishii further discloses wherein the network printer information comprises an IP *(Internet Protocol, i.e. xxx.xxx.xxx.xxx, second column of fig. 8)* address of the registered networked printer (second column of fig. 8).

Regarding claims 22-29: Claims 22-29 recite limitations that are similar and in the same scope of invention as to those in claims 14-21 except computer readable memory for storing computer programs implanting the methods as described in claims 14-21. All computers/printers have some type of computer readable medium (i.e. print-data storing section 305, fig. 6, par. 36, page 6) for storing computer programs; hence claims 22-29 would be rejected using the same rationale as in claims 14-21.

Regarding claim 30, Ishii discloses a system *(printing system, fig. 1)* comprising:
• at least one host computer *(print server 30, fig. 1)*;
• a plurality of printers *(printers 20-21, fig. 1)*;
• a network *(network 50, fig. 1)* adapted to transfer data between the at least one host computer and the plurality of network printers;
• wherein the at least one host computer *(print server 30 includes a database retrieval 304 for acquiring printer's information from plurality of printers, fig. 6)* includes a controller, a memory *(status information storing unit 306, fig. 6)* operatively connected to the controller *(a cable connecting 303 and 306, fig. 6)*, and an interface adapted to transfer data between the controller and the network *(a cable connecting from print server 30 to network 50, fig. 6)*;
• wherein each of the plurality of network printer includes a controller *(inherently, all printers include a CPU)*, a memory *(print-data storing unit 202, fig. 4)* operatively connected to the controller, and an interface adapted to transfer data between the controller and the network *(a cable connecting printer 20-22 to network 50)*;

- wherein the controller *(database retrieval device 304 also registered plurality of printers connected to network 50, fig. 1)* of the at least one host computer is adapted to register at least one item of network print information in the memory *(status information storing unit 306 for storing printer's information acquired by database retrieval 304, fig. 6)* of the at least one host computer;

- wherein the controller *(database retrieval device 304 for acquiring printer's information, fig. 6)* of the at least one host computer is adapted to access the network printer information registered in the memory of the at least one host computer in response to a command for printing print-data being issued *(a printing command is issued by client computers 10-13)*;

- wherein the controller of the at least one host computer is adapted to transmit a request command from the at least one host computer to the plurality of network printers via the interface of the at least one host computer and the network and the respective interfaces of the plurality of network printers requesting the networked printers to transmit standby print information to the at least one host computer *(database retrieval 304 acquires and retrieves printer's information from plurality of printers connected via network 50, and such information includes "busy state, waiting state, error state, and etc" as shown in fig. 5)* via the respective interfaces of the plurality of the network printers and the network and the interface of the at least one host computer, the controller of each respective one of the plurality of network printers being adapted to determine the standby print information relating to the amount of standby print operations of the respective networked printers *(i.e. standby print operations as shown in fig. 5 are retrieved and acquired by print server 30)*;

- wherein the controller of the at least one host computer is adapted to determine a minimum-utilized networked printer having a lowest amount of standby print operations *(printer with "waiting status", that is, printers with a lowest amount of standby print operations, page 6)* from among the networked printers having standby print operations from the standby print operation transmitted from the networked printers to the at least one host computer in response to the request command; and

- wherein the controller of the at least one host computer is adapted to transmit (transmitting the print data to the printer having the lowest standby time *(lowest print operations, page 6)* the print-data from the at least one host computer to the network printer determined to be the

minimum-utilized network printer via the interface of the at least one host computer and to the network and the interface of the network printer determined to be the minimum-utilized network printer.

Regarding claim 31, Ishii further discloses the system of claim 30, wherein registering at least one item of network print information in the memory of the at least one host computer comprises:

• controller of the at least one host computer determining whether a command for registering network printer information in the at least one host computer has been issued *(database retrieval device 304 periodically retrieves and acquires printer's information, page 4, par. 28)*;

• the controller *(database retrieval device 304 periodically retrieves and acquires printer's information, page 4, par. 28, and inherently, these printers are connected to the server, otherwise, database retrieval device 304 cannot retrieve printer's information)* of the at least one host computer detecting the network printers connected to the network; and

• the controller *(database retrieval device 304 retrieves printer information and stores such information in status information storing unit 306, fig. 6)* of the at least one host computer storing the network printer information in a memory of the at least one host computer.

Regarding claim 32, Ishii further discloses the system of claim 31, further comprising the controller of the at least one host computer being adapted to assign priority numbers *(database retrieval unit also assigns priority numbers to the retrieved reports as shown in fig. 8, col. 2)* to the network printer information in order of detection and storing the assigning priority numbers in the memory.

Regarding claim 33, Ishii further discloses the system of claim 32, wherein determining a minimum-utilized networked printer by the controller of the at least one host computer comprises:

• the controller of the at least one host computer detecting the priority number assigned to the networked printers having the lowest amount of standby print operations *(printer with waiting status will first be perform the incoming print data, par. 16, page 3)*; and

• the controller of the at least one host computer selecting a networked printer having a preferential priority number as the minimum-utilized network printer *(printer with waiting status will first be perform the incoming print data, par. 16, page 3)*.

Regarding claim 34, Ishii further discloses the system of claim 30, wherein the network printer information comprises an IP *(Internet Protocol, second column of fig. 8)* address of the registered network printer.

Regarding claim 35, Ishii further discloses the system of claim 31, wherein the network printer information comprises an IP *(Internet Protocol, second column of fig. 8)* address of the registered network printer.

Regarding claim 36, Ishii further discloses the system of claim 32, wherein the network printer information comprises an IP *(Internet Protocol, second column of fig. 8)* address of the registered network printer.·

Regarding claim 37, Ishii further discloses the system of claim 33, wherein the network printer information comprises an IP *(Internet Protocol, second column of fig. 8)* address of the registered network printer.

(7)   Response to Argument

• Regarding claim 14, the applicant argued the cited prior art of record (JP 410116165) fails to teach and/or suggest a method of reducing standby time for printing in a system of networked printers connected to at least one host computer, the method comprising: registering; accessing; transmitting; determining; and transmitting print-data from at least one host computer to the network printer determined to be the minimum-utilized printer, **and such methods are performed by the "host computer" rather than by the "print server" as suggested by Ishii.** In response, Ishii explicitly teaches a print server 30 as shown in fig. 1 for performing the methods as described above (please see claim 1 rejection rationale/basis for more details). Print

server 30 (fig. 1) of Ishii and host computer (fig. 1) of applicant's disclosure are both having the same features (i.e. storage device, controller, transmitter, detector, and receiver) and both performing the same functions (i.e. selecting and determining which plurality of printers having the lowest standby print operations); *herein, the examiner interprets "print server" as taught by Ishii as a "host computer" cited by an applicant, since both contains the same features and performs the same functions.* Ishii acknowledged conventional print system (i.e. plurality of printers connected to a client computer without a need of a print server, par. 3 and par. 8) is inefficient and time consuming for determining the most optimum printer that is best matched the print job preferences/attributes (i.e. find a printer with color capability and available). Ishii proposed a print server that connects plurality of client computers and plurality of printers in a networked environment such as LAN (Local Area Network). The client simply submits a print job with attributes/preferences to a print server 30, and then the print server 30 will search and determine which plurality of printers having the capabilities and available (no errors and in waiting status) for performing the incoming print job with selected attributes/preferences *automatically* (pars. 15-19). The system as proposed by Ishii improves printing speed and operability (pars. 46-48). According to the originally filed specification, the applicant disclosed "a host computer" for performing the methods as discussed above. Nowhere in the originally filed specification that the applicant stated a "host computer" cannot be served as a "print server". *In broadest interpretations, the term "host computer" can be interprets as client computer, server (i.e. print server, storage server, email server and etc), workstation, and personal computer. According to Microsoft Press Computer Dictionary, 2nd edition: The Comprehensive Standard for Business School, Library and Home, Second Edition, a host computer is defined as the main computer in a system of computers or terminals connected by communication links, page 201; a print server is a workstation that is dedicated to managing the printers on a network, the print server can be any station on the network, page 317; a workstation is a combination of input, output, and computing hardware that can be used for work by an individual. More often, however, the term refers to a powerful stand-alone computer of the sort used in computer-aided design and other applications requiring a high-end, usually expensive, machine ($10000 and up) with considerable calculating or graphics capability. Increasingly, workstation is also used to refer to a microcomputer or terminal*

connected to a network, page 418-419. Apparently, "print server" falls in a category of the definition of a "host computer" as defined by Microsoft Press Computer Dictionary.

• Regarding claim 15, the applicant argued the cited prior art of record (JP 410116165) fails to teach and/or suggest a method for registering plurality of printers by the "host computer" rather than by the print server as taught by Ishii.

In response, Print server 30 (fig. 1) of Ishii and host computer (fig. 1) of applicant's disclosure are both having the same features (i.e. storage device, controller, transmitter, detector, and receiver) and both performing the same functions (i.e. selecting and determining which plurality of printers having the lowest standby print operations); *herein, the examiner interprets "print server" as taught by Ishii as a "host computer" cited by an applicant, since both contains the same features and performs the same functions. Please see response to argument (claim 14) for more details.*

• Regarding claim 16, the applicant argued the cited prior art of record (JP 410116165) fails to teach and/or suggest a method for assigning priority number is performed by the "host computer" rather than the print server as taught by Ishii.

In response, print server 30 also includes a *database retrieval unit 304 for assigning priority numbers to the retrieved reports as shown in fig. 8, first column.* Print server 30 (fig. 1) of Ishii and host computer (fig. 1) of applicant's disclosure are both having the same features (i.e. storage device, controller, transmitter, detector, and receiver) and both performing the same functions (i.e. selecting and determining which plurality of printers having the lowest standby print operations); *herein, the examiner interprets "print server" as taught by Ishii as a "host computer" cited by an applicant, since both contains the same features and performs the same functions. Please see response to argument (claim 14) for more details.*

• Regarding claim 17, the applicant argued the cited prior art of record (JP 410116165) fails to teach and/or suggest a method for detecting the priority number assigned to the networked printers having the lowest amount of standby print operatinon is performed by the "host computer" rather than the print server as taught by Ishii.

In response, print server further includes a control mechanism 303 for assigning the print data to the printer with waiting status, that is, printer with no print operations and available (no errors) to print the next incoming print job, page 6, fig. 8, for example, an incoming print job will be assigned to printers 2-3 (waiting status) rather than printer 1 (busy status) to enhance and reduce the waiting time of incoming print job); and selecting (selection of the lowest standby printer is automatically performed via a control mechanism 303 incorporated within the print server without the users/operators interface, and inherently, these operations can also be performed manually via a keyboard, control panel, and or etc). Print server 30 (fig. 1) of Ishii and host computer (fig. 1) of applicant's disclosure are both having the same features (i.e. storage device, controller, transmitter, detector, and receiver) and both performing the same functions (i.e. selecting and determining which plurality of printers having the lowest standby print operations); *herein, the examiner interprets "print server" as taught by Ishii as a "host computer" cited by an applicant, since both contains the same features and performs the same functions. Please see response to argument (claim 14) for more details.*

● Regarding claims 18-20, the applicant argued the cited prior art of record (JP 410116165) fails to teach and/or suggest the network printer information comprises an IP (Internet Protocol) is performed by the "host computer" rather than the print server as taught by Ishii.

In response, print server 30 generates a status report that includes a printer IP address (*Internet Protocol, i.e. xxx.xxx.xxx.xxx, second column of fig. 8).* Print server 30 (fig. 1) of Ishii and host computer (fig. 1) of applicant's disclosure are both having the same features (i.e. storage device, controller, transmitter, detector, and receiver) and both performing the same functions (i.e. selecting and determining which plurality of printers having the lowest standby print operations); *herein, the examiner interprets "print server" as taught by Ishii as a "host computer" cited by an applicant, since both contains the same features and performs the same functions. Please see response to argument (claim 14) for more details.*

● Regarding claims 22-29, the applicant argued the cited prior art of record (JP 410116165) fails to teach and/or suggest a storage device for storing a computer program implementing the methods as cited in claims 14-21.

In response, claims 22-29 recite limitations that are similar and in the same scope of invention as to those in claims 14-21 except computer readable memory for storing computer programs implanting the methods as described in claims 14-21. All computers/printers have some type of computer readable medium (i.e. print-data storing section 305, fig. 6, par. 36, page 6) for storing computer programs; hence claims 22-29 would be rejected using the same rationale as in claims 14-21.

• Regarding claims 30-37, the applicant argued the cited prior art of record (JP 410116165) fails to teach and/or suggest a system cited in claims 30-37.

In response, please see rejection rationale/basis as discussed in claims 30-37 for more details.

(8) Claims Appendix/Appeal

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior arts of Record

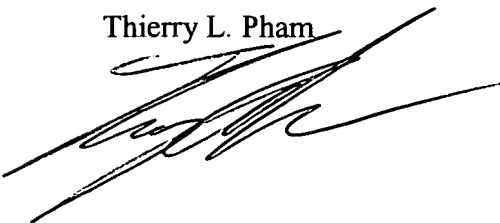|		
JP 410116165A	Ishii	May 6, 1998
US 6459496	Okazawa	October 1, 2002

(10) Examiner's Answer; Conclusion

For the above reasons, it is believed that the rejections should be sustained.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

• US 6459496 to Okazawa, discloses a method for selecting the printers having the lowest amount of standby time (abstract and figs. 4-8) via network communication between a host computer and printer without having to use the print server.
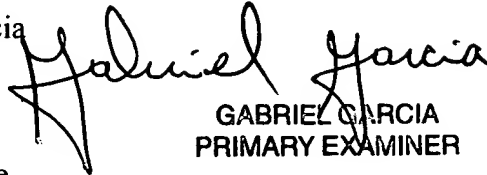
Respectfully submitted,

Thierry L. Pham
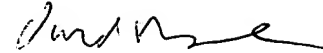
Conferees:

Gabriel Garcia
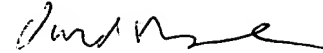
GABRIEL GARCIA
PRIMARY EXAMINER

David Moore

TECHNOLOGY CENTER 2600
SUPERVISORY PATENT EXAMINER
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movement of the electron beam from the right edge of one scan line to the left edge of the next. The time required for the beam to move is called the horizontal blanking interval because the electron beam is turned off as it moves to the left of the screen. *Compare* vertical retrace; *see also* blanking.

horizontal scrolling A feature of programs such as word processors and spreadsheets that enables the user to scroll left and right to display information beyond the horizontal limits of the screen (or window, in a graphical user interface).

horizontal synchronization On raster displays, the timing produced by a signal that controls the sweep of the display's electron beam as it moves from left to right (and back again), traveling line by line down the screen and lighting pixels to display an image. *See also* CRT.

host The main computer in a system of computers or terminals connected by communications links.

host language The language supported by a particular computer system (the host) in the absence of additional software to create the support. Strictly speaking, this would normally be the CPU's machine language, but the term is sometimes applied to a high-level language that is specifically supported by the operating system, toolbox routines, and native development systems.

hot carrier diode *See* Schottky diode.

hot key A one- or two-keystroke command that switches the user to a different program—usually a memory-resident program, such as a pop-up calculator, notepad, phone dialer, or terminal emulator. A memory-resident program, also called a terminate-and-stay-resident (TSR) program, loads into memory and stays out of the way until it's called on. When a user needs the TSR, the command for calling it up is the hot key—typically an Alt key or Control key combination, although it can be almost any combination on the keyboard, such as left Shift–right Shift. The key is called "hot" because the program it switches to is ready and waiting—in effect, fully warmed up. In the MS-DOS world, some programs also let users hot key (as a verb) out to DOS. Others let users define hot keys to start up other programs with a

single keystroke—for example, to hot key to a word processor from within a communications program.

hot spot The position in a mouse pointer that marks the exact screen location that will be affected by a mouse action such as a button press. Regardless of its shape, a mouse pointer's hot spot is only a single pixel in size and represents only a small portion of the graphical mouse pointer shape—for example, the screen position at the tip of a pointer shaped like an arrow, the position at the intersection of the lines in a cross, or the position at the tip of the pointing finger in a hand.

housekeeping Any of various routines designed to keep the system, the environment within which a program runs, or the data structures within a program itself in good working order. Housekeeping routines include periodically updating the clock, compacting the heap, and deallocating memory that is no longer needed.

HPFS Abbreviation for High Performance File System, a file system available with OS/2 versions 1.2 and later. The HPFS supports long, mixed-case filenames, exploits sophisticated data structures and several levels of caching to improve performance, and allows free-form information known as Extended Attributes (EAs) to be associated with files and directories. *See also* FAT file system, NTFS.

HPGL Abbreviation for Hewlett-Packard Graphics Language, a language devised by Hewlett-Packard for storing graphical images. Originally developed for images destined for plotters, HPGL translates graphics into metafiles—files of instructions that a program can use to re-create the original image. HPGL graphics can be used by application programs if they have the ability to "understand" the HPGL format.

HPIB Abbreviation for Hewlett-Packard Interface Bus. *See* general-purpose interface bus.

HSB Abbreviation for hue-saturation-brightness, a color model used in computer graphics for describing color. Hue is the color itself as placed on a color wheel, where 0° is red, 60° is yellow, 120° is green, 180° is cyan, 240° is blue, and 300°

ment, which can be one page or hundreds of pages long. To avoid having to print individual documents separately, some software can group multiple documents into a single print job. *See also* print spooler.

printout *See* hard copy.

print quality The quality and clarity of characters produced by a printer. Print quality varies with the type of printer: In general, dot-matrix printers produce lower-quality output than laser printers. The printer mode can also affect quality. Dot-matrix printers, for example, may operate in different modes with names such as draft quality, near-letter-quality, correspondence quality, or best quality. Draft quality, at the low end, is rapid but uses fewer dots to produce each character; near-letter-quality or best quality, at the high end, is relatively slow but uses more dots to form smoother characters. *See also* resolution.

Print Screen key A key that, on IBM PC and compatible keyboards, normally causes the computer to send a character-based "picture" of the screen contents to the printer. The print screen feature works only when the display is in text mode or CGA graphics mode (the lowest-resolution color and graphics mode available on IBM compatibles). It will not work properly in other graphics modes. Some programs use the Print Screen key to capture a screen image and record it as a file on disk. These programs can typically work in any graphics mode and record the file as a graphics image.

On some keyboards, such as the enhanced keyboard used with IBM PC and compatible computers, the Print Screen key alone is pressed. On other keyboards, including the original AT keyboard and the original PC/XT 83-key keyboard, the Print Screen key works only in combination with the Shift key. When the user is working directly with the MS-DOS operating system, and with some programs, the combination Control-Print Screen toggles the printer on or off. With printing turned on, the system sends every character to the printer as well as to the screen. The Print Screen key on the Apple Extended Keyboard is included for compatibility with operating systems such as MS-DOS.

print server A workstation that is dedicated to managing the printers on a network. The print server can be any station on the network.

print spooler Computer software that intercepts a print job on its way to the printer and sends it to disk or memory instead, where the print job is held until the printer is ready for it. The term *spooler* is an acronym created from simultaneous print operations on line. In operations where a printer has more than one simultaneous user or where a single user sends multiple print jobs to the printer, the spooler might use a simple first-come, first-served method, or it might assign different priorities to different print jobs, juggling them in order to give preferential treatment to some. In operations with one user and one print job, the print spooler still serves a purpose: By diverting the entire print job to disk or memory and then coordinating with the printer at the printer's speed, the spooler frees the user from waiting for the printer to finish before moving on to another task.

print wheel *See* daisy wheel.

priority Precedence in receiving the attention of the microprocessor and the use of system resources. Within a computer, unseen and unnoticed levels of priority are the means by which many different types of potential clashes and disruptions are avoided. Devices such as the timer, keyboard, modem, disk drives, and mouse have different interrupt priorities, both so that their individual requests for service do not conflict and so that none can interrupt the microprocessor at critical moments. Similarly, tasks running on a computer can be assigned priorities that determine when and for how long they receive time from the microprocessor. On networks, stations can be assigned priorities that determine when and how often they can control the communications line, and messages can be assigned priorities that indicate how soon they must be transmitted. *See also* interrupt.

private line *See* leased line.

privileged instruction An instruction (usually a machine instruction) that can be executed only by the operating system. Privileged instructions

ware pathway that carries information from place to place within the computer).

word processing Abbreviated WP. The act of entering text and editing with a word processor. *See also* word processor.

word processor An application program for manipulating text-based documents; the electronic equivalent of paper, pen, typewriter, eraser, and, most likely, dictionary and thesaurus. Word processors run the gamut from simple through complex, but all ease the tasks associated with editing documents (deleting, inserting, rewording, and so on). Depending on the program and the equipment in use, word processors can display documents either in text mode, using highlighting, underlining, or color to represent italics, boldfacing, and other such formatting, or in graphics mode, wherein formatting and, sometimes, a variety of fonts appear on the screen as they will on the printed page. All word processors offer at least limited facilities for document formatting, such as font changes, page layout, paragraph indention, and the like. Some word processors can also check spelling, find synonyms, incorporate graphics created with another program, correctly align mathematical formulas, create and print form letters, perform calculations, display documents in multiple on-screen windows, and enable users to record macros that simplify difficult or repetitive operations. *Compare* editor, line editor.

wordwrap The ability of a word-processing program to break lines of text automatically to stay within the page margins of a document. Line breaks created by wordwrap are known as soft returns. *See also* hard return, soft return.

worksheet A term used to describe a data file created by and used with an electronic spreadsheet program. Also, an alternative name for a spreadsheet. *See also* spreadsheet program.

workstation In general, a combination of input, output, and computing hardware that can be used for work by an individual. More often, however, the term refers to a powerful stand-alone computer of the sort used in computer-aided design and other applications requiring a high-end,

usually expensive, machine ($10,000 and up) with considerable calculating or graphics capability. Increasingly, *workstation* is also used to refer to a microcomputer or terminal connected to a network.

worm A program that propagates itself across computers, usually by spawning copies of itself in each computer's memory. A worm might duplicate itself in one computer so often that it causes the computer to crash. Sometimes written in separate "segments," a worm is introduced surreptitiously into a host system either for "fun" or with intent to damage or destroy information. The term comes from a science-fiction novel and has generally been superseded by the term *virus. See also* Trojan horse, virus.

WORM Acronym for "write once, read many." A type of optical disc that can be read and reread but cannot be altered after it has been recorded. WORMs are high-capacity storage devices. Because they cannot be erased. and rerecorded, they are suited to storing archives and other large bodies of unchanging information.

WP *See* word processing.

wrap around To continue movement, as with the cursor or a search operation, to the beginning or to a new starting point rather than stopping when the end of a series is reached. For example, the screen cursor normally wraps around to the first column of the next line rather than stopping when it reaches the last column of the current line. Likewise, a program starting a search or replace operation in the middle of a document might be instructed to wrap around to the beginning rather than stop when it reaches the end of the document.

write To transfer information either to a storage device, such as a disk, or to an output device, such as the monitor or a printer. Writing is the means by which a computer provides the results of processing. Writing is almost synonymous with outputting, except that writing implies outputting to a medium such as a disk drive. The opposite is reading—gathering information from storage or an input device such as the keyboard. *Write* is used as either a noun or a verb. For ex-

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PAT-NO: JP410116165A

DOCUMENT-IDENTIFIER: JP 10116165 A

TITLE: NETWORK PRINT SYSTEM

PUBN-DATE: May 6, 1998

INVENTOR-INFORMATION:

NAME   COUNTRY

ISHII, MASAHIRO

ASSIGNEE-INFORMATION:

NAME   COUNTRY

NEC CORP N/A

APPL-NO: JP08289178

APPL-DATE: October 11, 1996

INT-CL (IPC): G06F003/12 , B41J005/30 , B41J029/38 , G06F013/00

ABSTRACT:

    PROBLEM TO BE SOLVED: To provide a method and a system which efficiently select a printer
in a standby state by retrieving the internal status when printing data on the printer on a
network, and then shortens a printer print standby time as much as possible and speeds up
printing operation.

    SOLUTION: When computers 10 to 13 and printers 20 to 22 are connected to the network 50
and a computer prints print data on a printer, a print server 30 connected to the network 50
temporarily stores the print data from the computer, selects and determines an optimum
printer out of the printer devices 20 to 22 according to printer information including
operation states and print characteristic information obtained by inquiring the printer
information of the printer devices connected to the network, and sends the print data to the
determined printer device to print the print data.

(51)Int.Cl.⁶		識別記号	ＦＩ			
Ｇ０６Ｆ	3/12		Ｇ０６Ｆ	3/12		Ｄ
						Ｂ
Ｂ４１Ｊ	5/30		Ｂ４１Ｊ	5/30		Ｚ
	29/38			29/38		Ｚ
Ｇ０６Ｆ	13/00	３５１	Ｇ０６Ｆ	13/00	３５１Ｇ	

審査請求　有　請求項の数 3　ＦＤ　（全 7 頁）

(54)【発明の名称】　ネットワーク印刷システム

(57)【要約】

【課題】ネットワーク上のプリンタに印刷する場合、待機中のプリンタを内部のプリンタステータスを検索することによって、効率的に選択し、プリンタ印刷の待ち時間を極力減らして印刷の高速化する方法及びシステムの提供。

【解決手段】複数のコンピュータと複数のプリンタとがネットワーク接続され、コンピュータが印刷データをプリンタに印刷する際に、ネットワークに接続されたプリントサーバが、コンピュータからの印刷データを一旦に格納し、ネットワークに接続されたプリンタ装置にそれぞれの動作状況及び印刷特性情報を含むプリンタ情報を問い合わせその結果取得したプリンタ情報に基づき複数のプリンタ装置から最適なプリンタを選択して決定し、該決定されたプリンタ装置に印刷データを送信して印刷を行う。

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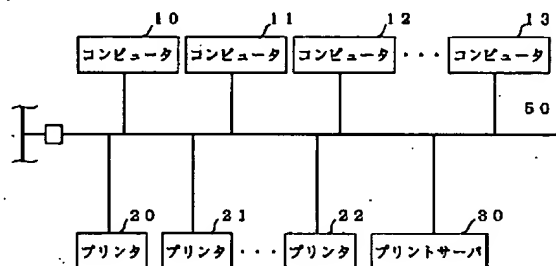
【特許請求の範囲】

【請求項１】複数のコンピュータと複数のプリンタ装置とがネットワーク接続され、

前記コンピュータが印刷データをプリンタに印刷する際に、

前記コンピュータからの前記印刷データを一時的に格納する手段を有し、

前記ネットワークに接続されたプリンタ装置に、それぞれの動作状況及び印刷特性情報を含むプリンタ情報を問い合わせ、その結果、取得したプリンタ情報を格納する手段と、

前記格納されたプリンタ情報に基づき前記複数のプリンタ装置から最適なプリンタを選択して決定する手段と、

前記決定したプリンタ装置に対して印刷要求を行って前記印刷データを送信する手段と、

を有するプリントサーバ装置を、備えたことを特徴とするネットワーク印刷システム。

【請求項２】前記プリンタサーバ装置が、前記ネットワークに接続されたプリンタ装置に対して、その状態を定期的に問い合わせ、前記プリントサーバ装置の状態情報を更新することを特徴とする請求項１記載のネットワーク印刷システム。

【請求項３】複数のコンピュータと複数のプリンタ装置とがネットワーク接続され、

前記コンピュータが印刷データをプリンタ装置に印刷する際に、前記ネットワークに接続されたプリントサーバ装置が、

前記コンピュータからの前記印刷データを一旦に格納し、前記ネットワークに接続されたプリンタ装置に、それぞれの動作状況及び印刷特性情報を含むプリンタ情報を問い合わせ、その結果、取得したプリンタ情報に基づき前記複数のプリンタ装置から最適なプリンタを選択して決定し、

前記プリントサーバ装置が前記決定したプリンタ装置に対して印刷要求を行い該決定されたプリンタ装置にて前記印刷データを印刷する、ことを特徴とするネットワークプリンタの選択最適化方法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、ネットワーク上に配置される複数のプリンタより１台を選択する方法及び装置に関し、特にネットワークプリンタ選択の最適化方式に関する。

【０００２】

【従来の技術】近年では、複数のコンピュータが共有するプリンタ装置として、ローカルエリアネットワーク（ＬＡＮ）などに代表されるネットワークシステムに接続される共有のプリンタ装置にネットワークを介して印刷データを高速に送信して印刷する、方式が実用化されている。

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【０００３】ネットワーク上に複数のプリンタ装置が配置されている場合には、印刷を要求するコンピュータが直接プリンタ名を指定することにより、指定のプリンタに印刷することが可能となる。

【０００４】しかし、この場合、印刷データ送信元のコンピュータ自身がプリンタの状態に関係なく、一方的に印刷するプリンタを指定してしまうために、たとえ複数台のプリンタ装置をネットワーク上に配置されていても、場合によっては、印刷要求が１つのプリンタに集中してしまうことが生じる。これは、利用者は、通常、ネットワーク管理下の複数台のプリンタ装置全ての使用状況及び特性を把握しているとは限らず、特定のプリンタ装置を指定する、ことによる。

【０００５】上記した類の問題を解消するための従来技術の一例として、次のようなものがある。

【０００６】例えば特開平６－２５９２０６号公報には、印字データを複数リンクさせてプリントキューを形成し、複数のプリントキューから印字データを複数のプリンタに送り、複数の印字データを順に印字するように制御することにより、自動的に負荷の少ないプリンタを選択して出力するようにしたネットワークプリンタ最適化方法が提案されている。

【０００７】また例えば特開平７－２００２０３号公報には、ネットワーク管理下の全てのプリンタの印刷負荷を均等化でき印刷ジョブとプリンタ装置とのそれぞれの特性のマッチングを適正に行うための方法として、個々のプリンタ装置によりそれぞれのプリンタ装置の負荷状態を認識し、認識された負荷状態が予め設定された規定値を超えている場合には、ネットワーク上の他のプリンタ装置へ印刷ファイルを転送するために、ネットワーク上の全てのプリンタ装置の負荷状況及び印刷特性情報を含む情報を入手し、当該印刷ファイルの印刷に最適なプリンタ装置を選択し、且つ転送するようにしたプリンタ出力制御方法及び装置が提案されている。この従来技術は、ネットワークプリンタが印刷データを受信した際に、他のデータの印刷中であった場合に、他のプリンタに、受信したデータを転送することで、印刷の順番待ちを無くすようにしたものである。

【０００８】さらに例えば特開平７－２００２０４号公報には、ネットワーク上のプリンタ装置へ印刷ファイルを転送するためにネットワーク上の全てのプリンタ装置の負荷状況及び印刷特性情報を含む情報を入手し、当該印刷ファイルの印刷に最適なプリンタ装置を選択し、選択されたプリンタ装置名を要求先のワークステーションへ通知するプリンタ装置の自動選択方法及び装置が提案されている。この従来技術は、プリンタの現在の状態を得る手段を送信元のコンピュータ自身が持ち、待機中のプリンタを選んで、印刷指示を出すことにより、効率的な印字先プリンタ選択を行うようにしたものである。

【０００９】

3

【発明が解決しようとする課題】しかしながら、上記した従来の方式はそれぞれ下記記載の問題点を有している。

【００１０】第１の問題点として、ネットワークに複数のプリンタ装置が存在していても、印刷要求者は、必ず、プリンタ装置を指定しなければならないため、特定のプリンタ装置に印刷要求が集中してしまい（印刷負荷の集中）、その結果、他のプリンタ装置が利用可能であるにもかかわらず、印刷出力が待たされることがある、ということである。

【００１１】上記第１の問題点を解決するために、上記各公報にそれぞれ提案されている従来技術についても、印字要求するコンピュータ、或いは全てのプリンタのいずれかが、ネットワーク上の全てのプリンタ装置の状態を監視しなければならず、効率が悪い、という問題点を有している。

【００１２】また全てのコンピュータ或いは全てのプリンタ装置が、ネットワークを監視する機構を具備する必要があり、保守性の点でも、問題がある。

【００１３】したがって、本発明は、上記問題点に鑑みてなされたものであって、その目的は、ネットワーク上のプリンタに印刷する場合、待機中のプリンタを内部のプリンタステータスを検索することによって、効率的に選択し、プリンタ印刷の待ち時間を極力減らして印刷の高速化を図り、これにより生産性の向上を達成するネットワーク印刷システム及びネットワークプリンタ選択最適化方法を提供することにある。

【００１４】また、本発明の他の目的は、全てのプリンタ或いは全てのコンピュータがネットワーク上のプリンタ装置の状態を検索する機能を具備することを不要とし、該機能を持つ装置をネットワーク上に１つ設置するだけで済み、これにより保守性の向上を達成するネットワーク印刷システム及びネットワークプリンタ選択最適化方法を提供することにある。

【００１５】

【課題を解決するための手段】前記目的を達成するため、本発明は、複数のコンピュータと複数のプリンタ装置とがネットワーク接続され、前記コンピュータが印刷データをプリンタに印刷する際に、前記コンピュータからの前記印刷データを一時的に格納する手段を有し、前記ネットワークに接続されたプリンタ装置に、それぞれの動作状況及び印刷特性情報などプリンタ情報を問い合わせ、その結果、取得したプリンタ情報を格納する手段と、前記格納されたプリンタ情報に基づき前記複数のプリンタ装置から最適なプリンタを選択して決定する手段と、前記決定したプリンタ装置に対して印刷要求を行って前記印刷データを送信する手段と、を有するプリントサーバ装置を備えたことを特徴としたものである。

【００１６】また、本発明のネットワークプリンタの選択最適化方法は、複数のコンピュータと複数のプリンタ

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装置とがネットワーク接続され、前記コンピュータが印刷データをプリンタに印刷する際に、前記ネットワークに接続されたプリントサーバ装置が、前記コンピュータからの前記印刷データを一旦に格納し、前記ネットワークに接続されたプリンタ装置に、それぞれの動作状況及び印刷特性情報を含むプリンタ情報を問い合わせ、その結果、取得したプリンタ情報に基づき前記複数のプリンタ装置から最適なプリンタを選択して決定し、前記プリントサーバ装置が前記決定したプリンタ装置に対して印刷要求を行い該決定されたプリンタ装置にて前記印刷データを印刷する、ことを特徴とする。

【００１７】

【発明の実施の形態】本発明の実施の形態について以下に説明する。本発明は、その好ましい実施の形態において、ネットワークに複数のコンピュータ、複数のプリンタ装置、及びプリントサーバ装置が接続され、ネットワーク上の全てのプリンタ装置の状態を検索する機構をプリントサーバ装置（図１の３０）に実装する。このプリントサーバ装置は、ネットワークをアクセスしてプリンタ装置の現在の使用（負荷）状態及び印刷特性を含む情報を取得する機能を持つ検索機構（図６の３０４）、これらの検索結果をデータベースとして格納しておくステータス情報格納部（図６の３０６）を含んで構成される。

【００１８】本発明の実施の形態において、このプリンタサーバ装置の検索機構（図６の３０４）は、例えば定期的にネットワーク上のプリンタ装置にアクセスして、プリンタ装置の状態を確認し、ステータス情報格納部にその状態を格納している。

【００１９】一方、プリンタサーバ装置は、ネットワークを介してコンピュータ（図１の１０～１３参照）からの印刷データを受信すると、ステータス情報格納部を検索して、待機中のプリンタ装置を探し、プリンタ装置を選択し、当該プリンタ装置に印刷データを転送する。このように本発明の実施の形態によれば、待機中のプリンタを簡単に決定し、印刷を早く開始することが可能となる。

【００２０】

【実施例】上記した本発明の実施の形態について更に詳細に説明すべく、本発明の実施例について図面を参照して以下に説明する。

【００２１】図１は、本発明の一実施例のシステムの全体構成の一例を示す図である。

【００２２】図１を参照すると、本実施例においては、ＬＡＮ等ネットワーク５０上に複数のコンピュータ１０～１３、複数のプリンタ装置２０～２２、及びプリントサーバ装置３０が接続されている。なお、ネットワークとしてはリング型であってもよく、さらにルータ等のゲートウエイを介して他のネットワークと接続される構成としてもよい。

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【００２３】図２は、本発明の一実施例に係るネットワークに接続されるコンピュータ（例えば図１の１０）の概略構成を示すブロック図である。図２を参照すると、コンピュータ１０は、ユーザインターフェースを担う表示部１０１と、印刷するデータや印刷要求などを自装置の情報を付加してプリントサーバ装置３０に送り出す印刷要求処理部１０２と、このコンピュータに関する情報を格納し、プリントサーバ装置３０などのネットワーク上の他の機器からの問い合わせに対して自装置の情報を返す機能を持つコンピュータ情報格納部１０３と、を含んでいる。なお、図１のコンピュータ１１～１３もコンピュータ１０と同様の構成を含むものとする。

【００２４】図３に、図２に示したコンピュータ１０のコンピュータ情報格納部１０３の内容の一例を示す。図３を参照して、コンピュータ情報格納部１０３は、ネットワーク上で唯一の符号となり、当該コンピュータを、ネットワーク上の他の機器から識別させることが可能なネットワークアドレスと、ネットワークアドレスに対応したコンピュータ名、及び、当該コンピュータを使用している使用者名が格納される。

【００２５】図４に、本発明の一実施例に係るプリンタ装置の概略構成をブロック図にて示す。図４を参照すると、プリンタ装置２０は、自装置の情報を格納したプリンタ情報格納部２０１と、送信されてきた印刷データを一時的に格納する印刷データ格納部２０２と、印刷データ格納部２０２に格納された印刷データを紙面等に印字する印刷機構２０３と、を備えて構成される。なお、図１のプリンタ装置２１～２２もプリンタ装置２０と同様の構成を含むものとする。

【００２６】図５は、プリンタ情報格納部２０１の内容の一例を説明するための図である。図５を参照して、プリンタ情報格納部２０１は、前述したコンピュータのコンピュータ情報格納部１０３と同じように、ネットワーク上で唯一の符号となり、本プリンタをネットワーク上で端的に示すことの可能なネットワークアドレスと、ネットワークアドレスに対応したプリンタ名、さらに自装置の現在の状況、例えば印刷中／待機中、或いはエラー（故障）中であることなど、を示すステータス情報が格納される。

【００２７】図６に、本発明の一実施例に係るプリントサーバ装置３０の概略構成をブロック図にて示す。

【００２８】図６を参照すると、プリントサーバ装置３０は、コンピュータより送られてくる印刷要求と送信元コンピュータ情報及び印刷データなどを認識して印刷データ格納部３０５に、例えば図７に示すような格納方式で格納の指示を出すデータ受信機構３０１と、印刷データ格納部３０５から印刷データを指定のプリンタに対して送信するデータ送信機構３０２と、ネットワーク５０上の各機器の個別情報に定期的にアクセスし、それがプリンタ装置である場合、そのステータス情報を引き出し

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てこれをステータス情報格納部３０６に反映させる検索機構３０４と、これらの動作を制御すると共に、印刷要求元に印刷状況の途中経過、あるいは印刷の終了を通知する制御機構３０３と、検索機構３０４による検索結果をデータベースとして格納しておくステータス情報格納部３０６と、を備えて構成される。

【００２９】図７を参照して、印刷データ格納部３０５には、送信元のコンピュータからの印刷データに付加して送信される送信元コンピュータ情報である、ネットワークアドレス、コンピュータ名、使用者名の情報、及び印刷データに関するドキュメント名、ページ数等の情報が印刷データ毎に順次格納される。

【００３０】次に、本発明の一実施例の動作について詳細に説明する。

【００３１】例えばコンピュータ１０の使用者があるデータを印刷しようとした場合、印刷要求処理部１０２（図２参照）は、印刷データにコンピュータ情報格納部１０３（図２参照）の情報を付加してプリントサーバ装置３０に送信する。

【００３２】その時、送信された情報は、プリントサーバ装置３０のデータ受信機構３０１（図６参照）が認識し、図７に示すような並びで印刷データ格納部３０５（図６参照）に格納する。

【００３３】もしその後に、データ受信機構３０１が、別の印刷データを受信した場合は、印刷データ格納部３０５の２番目、３番目のエリアへと順に格納していく。

【００３４】印刷要求があったことを確認した制御機構３０３（図６参照）は、ステータス情報格納部３０６をアクセスし、プリンタ情報のステータス部（図５参照）より「待機状態」のプリンタを探す。なおステータス情報格納部３０６には、検索機構３０４が定期的にネットワーク上のプリンタ装置を探し出し、そのプリンタ装置の情報を、プリンタ情報格納部２０１（図４参照）より引き出して格納している。このため、ほぼ常に、最新のネットワークプリンタの情報が反映される。

【００３５】制御機構３０３は、「待機中」のプリンタ装置を見つけると、印刷データ格納部に収まる印刷データの印字要求元コンピュータの情報、ドキュメント情報などを、ステータス情報格納部３０６のそのプリンタに対応するエリアに書き込み、プリンタ装置のデータ送信機構３０２（図６参照）に送信指示を出す。

【００３６】データ送信機構３０２はこの指示れを受けて、印刷データ格納部３０５より印刷データを指定されたプリンタ装置に送信する。

【００３７】その後、ステータス情報格納部３０６に格納された印字先のプリンタ情報と、検索機構３０４が随時更新する印刷文書情報の残ページ数などを、制御機構３０３は、印刷要求元コンピュータ１０に送信する。図８に、プリントサーバ装置３０のステータス情報格納部３０６の格納フォーマットの一例を示す。

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【００３８】これにより、使用者は、どのプリンタで印刷がどの程度進行しているのか知ることが可能となる。

【００３９】印刷データを受信したプリンタ装置２０（図１参照）は、印刷データを印刷データ格納部２０２（図４参照）に格納すると共に、プリンタ情報格納部２０１のステータスを「印刷中」に変更し、印刷データを印刷機構２０３により出力する。

【００４０】印刷が終了すると、印刷データ格納部２０２（図４参照）に格納されたデータをクリアし、再び、プリンタ情報格納部２０１のステータスを「待機中」に変更すると共に、プリントサーバ装置３０に印刷終了通知を発行する。

【００４１】印刷終了通知を受け取ったプリントサーバ装置３０の制御機構３０３（図６参照）は、印刷が終了したことを印刷要求元のコンピュータ１０に送信し、ステータス情報格納部３０６の印刷データの情報をクリアする。

【００４２】印刷要求元のコンピュータ１０は、印刷が終了したことをプリントサーバ装置３０の制御機構３０３より伝えられ、その情報を表示部に示すことにより使用者は印刷が正常に終了したことを知ることが可能となる。

【００４３】本発明の別の実施例として、例えば使用者がプリンタの種類を指定する場合、あるいは、カラー印刷要求など、プリンタの種類・特性に依存した機能を利用したい場合などがあげられる。

【００４４】この場合、プリンタ装置がそのプリンタ情報格納部２０１（図４参照）に格納する情報に、カラー情報などのプリンタの特性情報を加え、プリントサーバ装置３０の検索機構部３０４（図６参照）が、ネットワーク上の機器にアクセスして、それがプリンタ装置であった場合に得るプリンタの情報に、そのプリンタの特性情報も加えて得ることの可能な機能を加え、ステータス情報格納部３０６に、プリンタ特性を格納する領域を確保すること、で実現可能となる。

【００４５】さらに、その上で、コンピュータがプリントサーバ装置３０に送信してくる一連の印刷データにプリンタの種類、或いはプリンタの特性の要求を含めることにより、プリンタサーバ装置３０の制御機構３０３（図６参照）は、使用者の要求するプリンタを、ステータス情報格納部３０６のプリンタの特性情報領域を検索することにより決定することができ、適切なプリンタを選択することが可能となる。

【００４６】

【発明の効果】以上説明したように、本発明によれば、複数のプリンタのうち、１つのプリンタだけに負荷が集中することが回避され、これにより印刷速度を向上し、システム全体の処理効率を向上することができるという効果を奏する。

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【００４７】特に本発明によれば、プリンタサーバ装置が印刷データに対して最適のプリンタ装置を選択して印字出力するため、利用者はネットワークプリンタの全部の特性等を把握している必要はなく（例えばカラープリンタがどこに配備されているかなどの知識が不要）、操作性を向上している。

【００４８】さらに、本発明によれば、ネットワークのプリンタを検索する機能を持つ機器がプリンタサーバ装置だけでよく、不要なネットワークアクセスが低減すると共に、保守性も向上するという効果を奏する。

【図面の簡単な説明】

【図１】本発明の一実施例の全体構成を示すブロック図である。

【図２】本発明の一実施例におけるコンピュータの構成を示すブロック図である。

【図３】本発明の一実施例においてコンピュータ情報格納部に格納されるコンピュータ情報の格納フォーマットを示す図である。

【図４】本発明の一実施例におけるプリンタ装置も構成を示すブロック図である。

【図５】本発明の一実施例においてプリンタ情報格納部に格納されるプリンタ情報の格納フォーマットを示す図である。

【図６】本発明の一実施例におけるプリントサーバ装置の構成を示すブロック図である。

【図７】本発明の一実施例においてプリントサーバ装置の印刷データ格納部に格納される印刷データの格納フォーマットの一例を示す図である。

【図８】本発明の一実施例においてプリントサーバ装置のステータス情報格納部の格納フォーマットの一例を示す図である。

【符号の説明】

１０〜１３　コンピュータ

２０〜２２　プリンタ

３０　プリントサーバ

５０　ネットワーク

１０１　表示部（コンピュータ部）

１０２　印刷要求処理部（コンピュータ部）

１０３　コンピュータ情報格納部（コンピュータ部）

２０１　プリンタ情報格納部（プリンタ部）

２０２　印刷データ格納部（プリンタ部）

２０３　印刷機構（プリンタ部）

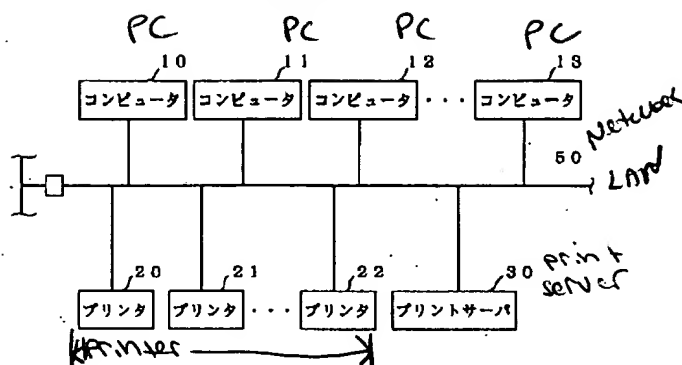３０１　データ受信機構（プリントサーバ部）

３０２　データ送信機構（プリントサーバ部）
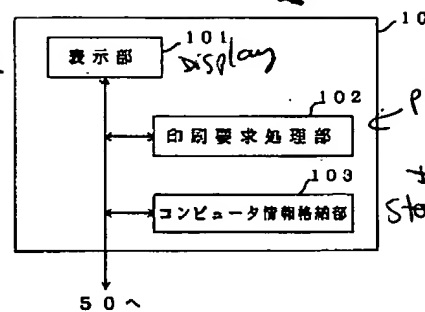
３０３　制御機構（プリントサーバ部）

３０４　検索機構（プリントサーバ部）

３０５　印刷データ格納部（プリントサーバ部）

３０６　ステータス情報格納部（プリントサーバ部）

【図1】

PC　PC　PC　PC

| コンピュータ 10 | コンピュータ 11 | コンピュータ 12 | ・・・ | コンピュータ 13 |

50　Network LAN

| プリンタ 20 | プリンタ 21 | ・・・ | プリンタ 22 | プリントサーバ 30 |

Printers　print server

【図2】　← PC

| 表示部 101 | Display |
| 印刷要求処理部 102 | print demand information storing unit |
| コンピュータ情報格納部 103 |

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50へ

【図3】

コンピュータ情報格納部	
ネットワークアドレス	xxx.xxx.xxx.xxx
コンピュータ名	ComputerName
使用者名	IshiiMasahiro

Username

contents of printer's information stored 20

【図4】

printer

printer information storing unit

50へ

| プリンタ情報格納部 201 |
| 印刷データ格納部 202 | ← print data storing unit |
| 印刷機構 203 | print Engine |

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【図5】

プリンタ情報格納部		
ネットワークアドレス	xxx.xxx.xxx.xxx	
コンピュータ名	ComputerName	
ステータス	コード	状態
	BUSY	印刷中
	WAIT	待機中
	ERROR	エラー
	：	：

【図6】

print server 30

receiving mean　transmission mean　control mechanism

50へ　50へ　50へ　50へ

| データ受信機構 301 | データ送信機構 302 | 制御機構 303 | 検索機構 304 |

database retrieval device for acquiring printer's status periodically

| 印刷データ格納部 305 | ステータス情報格納部 306 |

print-data storing unit　Status information storing unit　Stored

【図7】

	アドレス	コンピュータ名	使用者名	ドキュメント名	ページ数
1			印刷データ		
	アドレス	コンピュータ名	使用者名	ドキュメント名	ページ数
2			印刷データ		
3					
4					
：					

【図8】

	プリンタ情報			使用者情報			印刷文書情報		
	アドレス部	プリンタ名	ステータス部	アドレス部	コンピュータ名	使用者名	ドキュメント名	合計ページ数	残ページ数
1	xxx.xxx.xxx.xxx	Printer1	BUSY	aaa.aaa.aaa.aaa	Computer2	IshiiMasahiro	Document1	1 0	5
2	yyy.yyy.yyy.yyy	Printer2	WAIT	：	：	：	：	：	：
3	zzz.zzz.zzz.zzz	Printer3	WAIT	：	：	：	：	：	：
4	：	：	：	：	：	：	：	：	：

* NOTICES *

1.This document has been translated by computer. So the translation may not
reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the optimization method of
network printer selection especially about the approach and equipment which
choose one set from two or more printers arranged on a network.
[0002]
[Description of the Prior Art] In recent years, the method which transmits and
prints print data through a network at a high speed to the shared printer'
equipment connected to the network system represented in a Local Area Network
(LAN) etc. is put in practical use as printer equipment which two or more
computers share.
[0003] When two or more printer equipments are arranged on the network, the
computer which requires printing becomes possible [printing to the appointed
printer] by specifying a direct printer name.
[0004] However, in order to specify the printer which prints on a target on the
other hand as the condition of a printer regardless of the computer of print-
data transmitting origin itself in this case, even if it arranges two or more
printer equipments of a base on the network, it will arise that a printing
demand concentrates on one printer depending on the case. This does not usually
restrict grasping all the operating condition and property of two or more
printer equipments under network administration, but a user depends it on what
specific printer equipment is specified for.
[0005] There is the following as an example of the conventional technique for
solving the above-mentioned problem of a kind.
[0006] For example, the network printer optimization approach chooses a printer
with few loads automatically and it was made to output is proposed by making
JP,6-259206,A carry out two or more links of the printing data, forming a print
queue in it, and controlling to print printing data from two or more print
queues to two or more printers, and to print delivery and two or more printing
data in order.
[0007] Moreover, in JP,7-200203,A As an approach for being able to equate the
printing load of all the printers under network administration, and matching
each property of a print job and printer equipment proper When the loaded
condition of each printer equipment is recognized with each printer equipment
and the recognized loaded condition is over the default value set up beforehand
In order to transmit a print file to other printer equipments on a network The
printer output-control approach and equipment which receive information
including the load profile initiation and printing property information on all
printer equipments on a network, and choose the optimal printer equipment for
printing of the print file concerned, and were transmitted are proposed. This
conventional technique loses the turn waiting of printing by transmitting the

http://www4.ipdl.ncipi.go.jp/cgi-bin/tran_web_cgi_ejje   2/16/05

data received to other printers, when a network printer receives print data and other data are printing.

[0008] Further for example, in order to transmit a print file to the printer equipment on a network, information including the load profile initiation and printing property information on all printer equipments on a network comes to hand, the optimal printer equipment for printing of the print file concerned is chosen as JP,7-200204,A, and the automatic selection approach of printer equipment and the equipment which notify the selected printer device name to the workstation of a demand place are proposed. This conventional technique is made to perform efficient printing place printer selection by the computer of a transmitting agency itself having a means to acquire the current condition of a printer, choosing an waiting printer, and issuing printing directions.
[0009]
[Problem(s) to be Solved by the Invention] However, the above-mentioned conventional method has the trouble of the following publication, respectively.

[0010] Even if two or more printer equipments exist in the network as the 1st trouble, a printing claimant is surely that a printout may be kept waiting, although a printing demand concentrates on specific printer equipment (concentration of a printing load), consequently other printer equipments are available, since printer equipment must be specified.
[0011] In order to solve the 1st trouble of the above, also about the conventional technique proposed by each above-mentioned official report, respectively, either the computer which carries out a printing demand, or all printers must supervise the condition of all the printer equipments on a network, and it has the trouble that effectiveness is bad.
[0012] Moreover, it is necessary to provide the device in which all computers or all printer equipments supervise a network, and there is a problem also in respect of maintainability.
[0013] Therefore, this invention is made in view of the above-mentioned trouble, and when printing to the printer on a network, it chooses an waiting printer efficiently by searching the internal printer status, and the purpose reduces the latency time of printer printing as much as possible, attains improvement in the speed of printing, and is to offer the network printing system and the network printer selection optimization approach this attains improvement in productivity.
[0014] Moreover, all printer or all computers make it unnecessary to provide the function to search the condition of the printer equipment on a network, and other purposes of this invention just need to install equipment with this function on [one] a network, and are to offer the network printing system and the network printer selection optimization approach this attains improvement in maintainability.
[0015]
[Means for Solving the Problem] In order to attain said purpose, network connection of the printer equipment of two or more computers and plurality is carried out. [this invention] In case said computer prints print data to a printer, it has a means to store said print data from said computer temporarily. A means to store the printer information which asked the printer equipment connected to said network printer information, such as each situation of operation and printing property information, consequently was acquired to it, A means to choose and determine the optimal printer from said two or more printer equipments based on said stored printer information, It is characterized by having print server equipment which has a means to perform a

printing demand to said determined printer equipment, and to transmit said print data.

[0016] Moreover, the selection optimization approach of the network printer of this invention Network connection of two or more computers and two or more printer equipments is carried out. In case said computer prints print data to a printer, the print server equipment connected to said network said print data from said computer once being boiled, being stored, and to the printer equipment connected to said network Printer information including each situation of operation and printing property information is asked. Consequently, based on the acquired printer information, the optimal printer is chosen and determined from said two or more printer equipments, and said print server equipment performs a printing demand to said determined printer equipment, and is characterized by what said print data are printed for with the this determined printer equipment.

[0017]
[Embodiment of the Invention] The gestalt of operation of this invention is explained below. In the gestalt of the desirable operation, two or more computer, two or more printer equipments, and print server equipment are connected to a network, and this invention mounts the device in which the condition of all the printer equipments on a network is searched in print server equipment (30 of drawing 1). This print server equipment is constituted including the status information storing section (306 of drawing 6) which stores as a database retrieval devices (304 of drawing 6) with the function which acquires the information which accesses a network and includes the present use (load) condition and present printing property of printer equipment, and these retrieval results.

[0018] the gestalt of operation of this invention -- setting -- the retrieval device (304 of drawing 6) of this printer server equipment -- for example, the printer equipment on a network is accessed periodically, the condition of printer equipment is checked, and that condition is stored in the status information storing section.

[0019] On the other hand, if printer server equipment receives the print data from a computer (ten to 13 reference of drawing 1) through a network, it will search the status information storing section, will look for waiting printer equipment, will choose printer equipment, and will transmit print data to the printer equipment concerned. Thus, according to the gestalt of operation of this invention, an waiting printer is determined simply and it becomes possible to start printing early.

[0020]
[Example] The gestalt of operation of above-mentioned this invention is explained below with reference to a drawing about the example of this invention that it should explain to a detail further.

[0021] Drawing 1 is drawing showing an example of the whole configuration of the system of one example of this invention.

[0022] Reference of drawing 1 connects two or more computers 10-13, two or more printer equipments 20-22, and print server equipment 30 on the networks 50, such as LAN, in this example. In addition, as a network, you may be a ring type and it is good also as a configuration further connected with other networks through Gateway, such as a router.

[0023] Drawing 2 is the block diagram showing the outline configuration of the computer (for example, 10 of drawing 1) connected to the network concerning one example of this invention. If drawing 2 refers to, a computer 10 contains the display 101 which bears a user interface, the printing demand processing

section 102 which add the information on self-equipment and send out data, the printing demand, etc. print to print server equipment 30, and the computer information storing section 103 with the function of storing the information about this computer and returning the information on self-equipment to the inquiry from other devices on networks, such as print server equipment 30. In addition, the computers 11-13 of drawing 1 shall also include the same configuration as a computer 10.

[0024] An example of the contents of the computer information storing section 103 of the computer 10 shown in drawing 3 at drawing 2 is shown. With reference to drawing 3 , the computer information storing section 103 serves as the only sign in a network top, and the computer name corresponding to the network address where it is possible to make the computer concerned discriminate from other devices on a network, and a network address, and the user name which is using the computer concerned are stored.

[0025] A block diagram shows the outline configuration of the printer equipment applied to one example of this invention at drawing 4 . When drawing 4 is referred to, printer equipment 20 is equipped with the printer information storing section 201 which stored the information on self-equipment, the print-data storing section 202 which stores the transmitted print data temporarily, and the print station 203 which prints in space etc. the print data stored in the print-data storing section 202, and is constituted. In addition, the printer equipments 21-22 of drawing 1 shall also include the same configuration as printer equipment 20.

[0026] Drawing 5 is drawing for explaining an example of the contents of the printer information storing section 201. With reference to drawing 5 , the status information which shows that the printer information storing section 201 is under /waiting or error further among the printer name corresponding to the possible network address of becoming the only sign in a network top like the computer information storing section 103 of the computer mentioned above, and this printer being directly shown on a network and a network address and the present situation of self-equipment, for example, printing, (failure) etc. is stored.

[0027] A block diagram shows the outline configuration of the print server equipment 30 applied to one example of this invention at drawing 6 .

[0028] When drawing 6 is referred to, print server equipment 30 The printing demand sent from a computer, transmitting agency computer information, print data, etc. are recognized. In the print-data storing section 305 For example, the data receiving device 301 in which directions of storing are taken out with a storing method as shown in drawing 7 , The data transmitter style 302 which transmits from the print-data storing section 305 to the printer of assignment of print data, The retrieval device 304 in which access periodically the individual information on each device on a network 50, pull out the status information when it is printer equipment, and this is made to reflect in the status information storing section 306, While controlling these actuation, it has the controlling mechanism 303 which notifies the progress of a printing situation, or termination of printing to printing demand origin, and the status information storing section 306 which stores the retrieval result by the retrieval device 304 as a database, and is constituted.

[0029] With reference to drawing 7 , sequential storing of the information, such as information on the network address and computer name which are the transmitting agency computer information added and transmitted to print data from the computer of a transmitting agency, and a user name and a document name about print data, and pagination, is carried out for every print data at the

print-data storing section 305.

[0030] Next, actuation of one example of this invention is explained to a detail.

[0031] For example, when it is going to print data with the user of a computer 10, the printing demand processing section 102 (refer to drawing 2) adds the information on the computer information storing section 103 (refer to drawing 2) to print data, and transmits to print server equipment 30.

[0032] Then, the data receiving device 301 (refer to drawing 6) of print server equipment 30 recognizes the transmitted information, and it is stored in the print-data storing section 305 (refer to drawing 6) in a list as shown in drawing 7 .

[0033] When the data receiving device 301 receives another print data after that, it stores in the 2nd of the print-data storing section 305, and the 3rd area in order.

[0034] The controlling mechanism 303 (refer to drawing 6) which checked that there had been a printing demand accesses the status information storing section 306, and looks for the printer of a "standby condition" from the status section (refer to drawing 5) of printer information. In addition, the retrieval device 304 discovers the printer equipment on a network in the status information storing section 306 periodically, and the information on the printer equipment is pulled out and stored in it from the printer information storing section 201 (refer to drawing 4). For this reason, the information on the newest network printer is almost always reflected.

[0035] If "waiting" printer equipment is found, a controlling mechanism 303 will write the information on the printing demand former computer of the print data settled in the print-data storing section, document information, etc. in the area corresponding to the printer of the status information storing section 306, and will take out transmitting directions to the data transmitter style 302 (refer to drawing 6) of printer equipment.

[0036] The data transmitter style 302 transmits to the printer equipment which had print data specified from the print-data storing section 305 in response to this ******.

[0037] Then, as for a controlling mechanism 303, the ** pagination of the printer information on the printing place stored in the status information storing section 306 and the printing document information which the retrieval device 304 updates at any time etc. is transmitted to the printing demand former computer 10. An example of the storing format of the status information storing section 306 of print server equipment 30 to drawing 8 is shown.

[0038] Thereby, a user becomes possible [getting to know how many printings are advancing] by which printer.

[0039] The printer equipment 20 (refer to drawing 1) which received print data changes the status of the printer information storing section 201 "during printing", and outputs print data according to a print station 203 while it stores print data in the print-data storing section 202 (refer to drawing 4).

[0040] After printing is completed, the data stored in the print-data storing section 202 (refer to drawing 4) are cleared, and while changing the status of the printer information storing section 201 into "it is waiting", the notice of printing termination is again published to print server equipment 30.

[0041] The controlling mechanism 303 (refer to drawing 6) of the print server equipment 30 which received the notice of printing termination transmits that printing was completed to the computer 10 of printing demand origin, and clears the information on the print data of the status information storing section 306.

[0042] It is told from the controlling mechanism 303 of print server equipment 30 that printing ended the computer 10 of printing demand origin, and a user becomes possible [getting to know that printing was completed normally] by showing the information in a display.

[0043] As another example of this invention, when a user specifies the class of printer, the case where he wants to use the function depending on the class and the property of printers, such as a color printing demand, etc. is raised.

[0044] Printer equipment to in this case, the information stored in that printer information storing section 201 (refer to drawing 4) Add the property information on printers, such as color information, and the retrieval device section 304 (refer to drawing 6) of print server equipment 30 accesses the device on a network. securing the field which adds the possible function of also adding and acquiring the property information on the printer to the information on the printer obtained when it is printer equipment, and stores a printer property in it at the status information storing section 306 -- it comes out and becomes realizable.

[0045] Furthermore, when a computer includes a demand of the class of printer, or the property of a printer in a series of print data transmitted to print server equipment 30 on it, the controlling mechanism 303 (refer to drawing 6) of printer server equipment 30 can determine the printer which a user demands by searching the property information field of the printer of the status information storing section 306, and becomes possible [choosing a suitable printer].

[0046]

[Effect of the Invention] As explained above, according to this invention, the effectiveness that it can be avoided that a load focuses only on one printer among two or more printers, it can improve a print speed by this, and can improve the processing effectiveness of the whole system is done so.

[0047] In order that printer server equipment may choose and carry out the printout of the optimal printer equipment to print data especially according to this invention, the user needs to grasp no properties of a network printer etc. (for example, where the color printer's being arranged and knowledge are unnecessary), and is improving operability.

[0048] Furthermore, according to this invention, a device with the function to search a network printer requires only printer server equipment, and while unnecessary network access decreases, the effectiveness that maintainability also improves is done so.

[Translation done.]
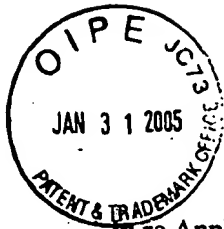
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In re Application of:

YONG-TAE JEONG

Serial No.:	09/576,218	Examiner:	PHAM, THIERRY L.
Filed:	22 May 2000	Art Unit:	2624
For:	REDUCING A STANDBY PERIOD OF TIME FOR PRINTING (as amended)		

Appeal No._____

Attn: Board of Patent Appeals & Interferences

TRANSMITTAL OF APPELLANT'S BRIEF FEE

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O.Box 1450
Alexandria, VA 22313-1450

Sir:

Accompanying this transmittal is a check drawn to the Commissioner of Patents & Trademarks in the amount of $500.00 (Check #48675) for the filing an **Appeal Brief** in support of a Notice of Appeal filed on 1 December 2004. Should the check become lost, be deficient in payment, or should other fees be incurred, the Commissioner is authorized to charge Deposit Account No. 02-4943 of Applicant's undersigned attorney in the amount of such fees.

Respectfully submitted,

Robert E. Bushnell
Attorney for Applicant
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Folio: P56085
Date: 31 January 2005
I.D.: REB/fw

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In re Application of:

YONG-TAE JEONG

Appeal No. _____

Serial No.: 09/576,218   Examiner: PHAM, THIERRY L.

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For: REDUCING A STANDBY PERIOD OF TIME FOR PRINTING (as amended)

APPEAL BRIEF

Paper No. 16

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O.Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the November 2, 2004 Advisory Action (Paper No. 20041028) and further

our Notice of Appeal of December 1, 2004, the following is submitted. The Appeal Brief is being

submitted in triplicate.

02/02/2005 JADD01   00000007 024943   09576218
01 FC:1402   500.00 DA

Folio: P56085
Date: 1/31/05
I.D.: REB/HZ/kf

-1-

I.   REAL PARTY IN INTEREST

Pursuant to 37 CFR §41.37(c)(1)(as amended), the real party in interest is:

Samsung Electronics Co., Ltd.
#416, Maetan-dong, Yeongtong-gu
Suwon-si, Gyeonggi-do, Republic of KOREA

as evidenced by an Assignment by the inventor, executed on June 27, 2000 and recorded in the US

Patent and Trademark Office on August 17, 2000 at Reel 011005, Frame 0153.

II. RELATED APPEALS AND INTERFERENCES

There are no other prior and pending appeals, interferences or judicial proceedings known

to Appellant, the Appellant's legal representative, or Assignee which may be related to, directly

affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-13 have been canceled. Claims 14-37 are the claims on appeal.

IV. STATUS OF AMENDMENTS

An Amendment After Final was submitted to the US Patent and Trademark Office on

September 23, 2004 and entered by the Examiner in the November 2, 2004 Advisory Action.

V. SUMMARY OF INVENTION

Independent claim 14 is directed to a method of reducing standby time for printing in a

system of networked printers connected to at least one host computer. Independent claim 22 is directed to a program storage device, readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method of reducing standby time for printing in a system of networked printers connected to at least one host computer. Independent claim 30 is directed to a system of networked printers connected to at least one host computer.

As noted in the first paragraph of the Summary of the Invention on page 4 of the original application, when a host computer detects the amount of print operations in every network to one of a plurality of printers, it transmits print data to a network printer that has no pending print operations or else has the least amount of print operations and causes the network printer to print the print data.

Figs. 1-3 are respectively a schematic diagram of the connections among a plurality of host computers and network printers, a block diagram of a host computer and network printer in detail, and a flowchart of a procedure for registering network printer information in the host computer. In these drawing figures are discussed in detailing on pages 7-10 of the original application. The specific procedure of the present invention is illustrated in Fig. 4 and discussed on pages 11 and 12 of the original application.

Fig. 4 and its corresponding description illustrate the claimed method steps of claim 14 as well as the method steps performed by the program storage device of claim 22 and the functions

performed by the recited elements of the system of claim 30.

The various recited method steps of claims 15-21 are discussed on pages 11 and 12 of the original application. Similarly, the method steps performed by the program storage device of claims 23-29 and the functions performed by the recited elements of the system of claims 31-37 are also discussed on pages 11 and 12 of the original application.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 14-37 have been rejected under 35 U.S.C. §102(b) as being anticipated by Ishii (JP410116165A) for the reasons stated in section 4 on pages 2-4 of the July 1, 2004 Final Office Action (Paper No. 11).

VIII. ARGUMENT

<u>Claim 14-</u>

The Examiner's rejection in the July 1, 2004 Final Office Action corresponds to the earlier rejection contained within the April 16, 2004 Office Action.

In the April 22, 2004 Amendment in response to the January 16, 2004 Office action (Paper No. 6), Appellants argued that the present invention relates to a system of networked printers in which at least one host computer is connected via a network to the plurality of networked printers. Information and commands are transmitted therebetween to reduce the standby time for printing.

All of the operations of the system are handled by the at least one host computer and the plurality of networked printers via the network connected therebetween. **No print server is necessary.**

In response thereto, the Examiner states "However, Ishii teaches a direct communication between a printer and host computer without having to use the print server (page 1)."

Appellants disagree with the Examiner's above-noted statement. There is nothing in the entire Ishii translation that indicates or even suggests that the network print system is operable without a print server. In fact, the Examiner's attention is directed to the "SOLUTION" stated in the Abstract of Ishii which states:

When computers 10 to 13 and printers 20 to 22 are connected to the network 50 and a computer prints printed data on a printer, **a print server 30 connected to the network 50 temporarily stores the print data from the computer, selects and determines an optimum printer out of the printer devices 20 to 22 according to printer information including operation states and print characteristic information obtained by inquiring the printer information of the printer devices connected to the network, and sends the print data to the determined printer device to print the print data.**

Furthermore, in response to the argument that the present invention operates without a print server, the Examiner states that claims 14-37 do not recite the nature of network communication

without a print server.

Appellants disagree with a Examiner since the entire application and present claims are directed to a networked printer system that operates without a print server. It is clear from the recitation of claim 14 that the **only** elements in the networked system are the printers connected to at least one host computer. It is clear that all of the method steps of claim 14 and claim 22, for example, refer to operations that are **only** carried out by the at least one host computer. In addition, systems claim 30 **only** recites at least one host computer, a plurality of network printers, and a network adapted to transfer data between the at least one host computer and the plurality of networked printer and further recites that the controller of the at least one host computer performs the various functions of the networked printer system.

Stated simply, it is inherent in the recitation of claims 14-37 that the at least one host computer performs **all** of the needed operations of the networked printer system. Ishii, on the other hand, is clearly directed to a networked printer system in which a print server performs all of the needed operations thereof. The entire translation of Ishii is directed to the operation of the print server 30 and its interaction with the computer is 10-13 and printers 20-22 (*see* pages 3-7 of the translation).

As to the specific points raised by the Examiner, the Examiner argues:

(1) that the registering step registers a plurality of printers with a print server. As noted above, the present invention operates without a print server.

(2) that the accessing step accesses information of the printers that [are] connected via a network. However, paragraph 0028 of Ishii indicates that the print server 30 performs this function rather than the at least one host computer as in the present invention.

(3) that the transmitting of a request command from the at least one host computer to the networked printers requesting the networked printers to transmit standby print information to the at least one host computer. However, paragraphs [0028]-[0038] of Ishii indicate that elements 301-306 of the print server 30 perform this function rather than the at least one host computer as in the present invention.

(4)-(5) that the determining and transmitting steps are disclosed in Ishii. However, as noted above, the print server 30 perform this function rather than the at least one host computer as in the present invention.

In view of the above, it is submitted that claim 14 is patentable over Ishii.

Claim 15-

The Examiner states: "Regarding claim 15, Ishii further discloses the method of claim 14,

wherein registering at least one item of network print information in at least one host computer comprises: determining (server, fig. 1, page 3) whether a command for registering network printer information in the at least one host computer has been issued; detecting (print server, page 4) the network printers connected to the network; and storing (storing section, fig. 2, page 4) the network printer information in a memory of the at least one host computer."

As noted above, the at least one host computer registering at least one item of network print information in at least one host computer does not use a print server. The present invention is directed to **eliminating** the need for a print server.

Accordingly, since the Examiner admits that the detecting step of claim 15 is performed by the print server of Ishii, it is submitted that Ishii teaches away from the present invention which eliminates the need for a print server.

In view of the above, it is submitted that claim 15 is patentable over Ishii.

<u>Claim 16-</u>

The Examiner states: "Regarding claim 16, Ishii further discloses the method of claim 15, further comprising the siding priority numbers to the network printer information in order of detection and storing the assigning priority numbers (left column, fig. 8) in the memory."

PATENT

However, as noted in section [0037] of the English language translation of Ishii, Fig. 8 is "an example of the storing format of the status information storing section 306". Section [0017] of the English language translation of Ishii indicates that the print server includes the status information storing section 306.

Accordingly, as noted above, the present invention is directed to eliminating the need for a print server. Since the recited feature of claim 16 is purportedly performed in the print server of Ishii, it is again submitted that Ishii teaches away from the present invention which eliminates the need for a print server.

In view of the above, it is submitted that claim 16 is patentable over Ishii.

Claim 17-

The Examiner states: "Regarding claim 17, Ishii further discloses the method of claim 16, wherein determining a minimum-utilized networked printer comprises: detecting (control mechanism, page 6) the priority numbers assigned to the networked printers having the lowest amounts of standby print operations (printer with waiting status, that is, printer with no print operations, page 6); and selecting (selects via a keyboard or mouse which is incorporated among the computer system) a networked printer having a preferential priority number as the minimum-utilized network printer.

However, it is noted that the control mechanism 303 of Ishii is part of the print server of Ishii as illustrated in Fig. 6 of Ishii.

Accordingly, as noted above, the present invention is directed to **eliminating** the need for a print server. Since at least one of the recited feature is of claim 17 is purportedly performed in the print server of Ishii, it is again submitted that Ishii teaches away from the present invention which eliminates the need for a print server.

In view of the above, it is submitted that claim 17 is patentable over Ishii.

Claims 18-20-

The Examiner states that Ishii further discloses the recited features of claims 18-20 as evidenced by the second column of Fig. 8.

As noted above, as noted in section [0037] of the English language translation of Ishii, Fig. 8 is "an example of the storing format of the status information storing section 306". Section [0017] of the English language translation of Ishii indicates that the print server includes the status information storing section 306.

Accordingly, as noted above, the present invention is directed to eliminating the need for a print server. Since the recited feature of claims 18-20 is purportedly performed in the print

server of Ishii, it is again submitted that Ishii teaches away from the present invention which eliminates the need for a print server.

In view of the above, it is submitted that claims 18-20 are patentable over Ishii.

Claims 22-29-

The Examiner states: "Regarding claims 22-29, please see rejection rationale/basis as described in claims 14-21 (respectively) for more details."

However, claims 22-29 are not directed to a method (as is claims 14-21) but rather are directed to a program storage device, readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method of producing standby time for printing and a system of network printers connected to at least one host computer.

However, Ishii does not teach or suggest the program storage device of claims 22-29 and accordingly, it is submitted that claims 22-29 are patentable over Ishii for that reason alone.

Furthermore, since the method steps performed by the machine as recited in claims 22-29 correspond to the method steps recited in claims 14-21, it is submitted that claims 22-29 are patentable over Ishii for the same reasons noted above with regard to claims 14-21.

Claims 30-37-

The Examiner states: "Regarding claims 30-37 , please see rejection rationale/basis as described in claims 14-21 (respectively) for more details."

Claims 30-33 recite a system comprising at least one host computer and a plurality of network printers and they network adapted to transfer data between the at least one computer and the plurality of network printers. They further recite that the at least one computer includes a controller, a memory operatively connected to the controller, and an interface adapted to transfer data between the controller and the network and further recite that each of the plurality of network printers include a controller, a memory operatively connected to the controller, and an interface adapted to transfer data between the controller and the network.

The remaining recitation of these claims recite functions performed by the controller of the at least one computer, these functions being related to the recited method steps of claims 14-17.

Since, as noted above, the recited method steps of claims 14-17 are not performed by the controller of Ishii but rather are performed by the print server of Ishii, it is submitted that claims 30-33 are patentable over Ishii for the reasons noted above with regard to claims 14-17.
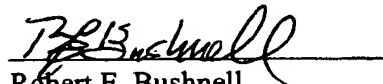
Similarly, the recitation of the functions of claims 34-37 are related to the recited method steps of claims 18-21.

Since, as noted above, the recited method steps of claims 18-21 are not performed by the controller of Ishii but rather are performed by the print server of Ishii, it is submitted that claims 34-37 are patentable over Ishii for the reasons noted above with regard to claims 18-21.

In view of the above, **reversal** of the final rejection of the claims on appeal is respectfully requested.

A fee of $500.00 is incurred by filing of this Appeal Brief Applicant's check drawn to the order of Commissioner accompanies this Amendment. Should the check become lost, be deficient in payment, or should other fees be incurred, the Commissioner is authorized to charge Deposit Account No. 02-4943 of Applicant's undersigned attorney in the amount of such fees.

Respectfully submitted,

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Folio: P56085
Date: 1/31/05
I.D.: REB/HZ

IX. APPENDIX

CLAIMS UNDER APPEAL (Claims 14-37)

1   14. (Previously Presented) A method of reducing standby time for printing in a system of

2   networked printers connected to at least one host computer, the method comprising:

3   the at least one host computer registering at least one item of network print information in

4   at least one host computer;

5   the at least one host computer accessing the network printer information registered in the

6   at least one host computer in response to a command for printing print-data being issued;

7   the at least one host computer transmitting a request command from the at least one host

8   computer to the networked printers requesting the networked printers to transmit standby print

9   information to the at least one host computer, the standby print information relating to the amount

10   of standby print operations of the respective networked printers;

11   the at least one host computer determining a minimum-utilized networked printer having

12   a lowest amount of standby print operations from among the networked printers having standby

13   print operations from the standby print information transmitted from the networked printers to the

14   at least one host computer in response to the request command; and

15   the at least one host computer transmitting the print-data from the at least one host

16   computer to the network printer determined to be the minimum-utilized network printer.

1   15. (Previously Presented) The method of claim 14, wherein registering at least one item

2   of network print information in at least one host computer comprises:

3   determining whether a command for registering network printer information in the at least

4   one host computer has been issued;

5   detecting the network printers connected to the network; and

6   storing the network printer information in a memory of the at least one host computer.

1   16. (Previously Presented) The method of claim 15, further comprising assigning priority

2   numbers to the network printer information in order of detection and storing the assigning priority

3   numbers in the memory.

1   17.   (Previously Presented) The method of claim 16, wherein determining a

2   minimum-utilized networked printer comprises:

3   detecting the priority numbers assigned to the networked printers having the lowest

4   amounts of standby print operations; and

5   selecting a networked printer having a preferential priority number as the minimum-utilized

6   network printer.

1   18.   (Previously Presented) The method of claim 14, wherein the network printer

2   information comprises an IP (Internet Protocol) address of the registered networked printer.

1   19.   (Previously Presented) The method of claim 15, wherein the network printer

2   information comprises an IP (Internet Protocol) address of the registered networked printer.

1   20. (Previously Presented) The method of claim 16, wherein the network printer

2   information comprises an IP (Internet Protocol) address of the registered networked printer.

1   21. (Previously Presented) The method of claim 17, wherein the network printer

2   information comprises an IP (Internet Protocol) address of the registered networked printer.

1   22. (Previously Presented) A program storage device, readable by a machine, tangibly

2   embodying a program of instructions executable by the machine to perform a method of reducing

3   standby time for printing in a system of networked printers connected to at least one host

4   computer, the method comprising:

5   the at least one host computer registering at least one item of network print information in

6   at least one host computer;

7   the at least one host computer accessing the network printer information registered in the

8   at least one host computer in response to a command for printing print-data being issued;

9   the at least one host computer transmitting a request command from the at least one host

10   computer to the networked printers requesting the networked printers to transmit standby print

11   information to the at least one host computer, the standby print information relating to the amount

12   of standby print operations of the respective networked printers;

13   the at least one host computer determining a minimum-utilized networked printer having

14   a lowest amount of standby print operations from among the networked printers having standby

15   print operations from the standby print information transmitted from the networked printers to the

16   at least one host computer in response to the request command; and

17   the at least one host computer transmitting the print-data from the at least one host

18   computer to the network printer determined to be the minimum-utilized network printer.

1   23. (Previously Presented) The program storage device of claim 22, wherein registering

2   at least one item of network print information in at least one host computer comprises:

3   determining whether a command for registering network printer information in the at least

4   one host computer has been issued;

5   detecting the network printers connected to the network; and

6   storing the network printer information in a memory of the at least one host computer.

1   24. (Previously Presented) The program storage device of claim 23, the method further

2   comprising assigning priority numbers to the network printer information in order of detection and

3   storing the assigning priority numbers in the memory.

1   25. (Previously Presented) The program storage device of claim 24, wherein determining

2   a minimum-utilized networked printer comprises:

3   detecting the priority numbers assigned to the networked printers having the lowest

4   amounts of standby print operations; and

5   selecting a networked printer having a preferential priority number as the minimum-utilized

6   network printer.

1   26. (Previously Presented) The program storage device of claim 22, wherein the network

2   printer information comprises an IP (Internet Protocol) address of the registered networked printer.

1   27. (Previously Presented) The program storage device of claim 23, wherein the network

2   printer information comprises an IP (Internet Protocol) address of the registered networked printer.

1.   28. (Previously Presented) The program storage device of claim 24, wherein the network

2   printer information comprises an IP (Internet Protocol) address of the registered networked printer.

1   29. (Previously Presented) The program storage device of claim 25, wherein the network

2   printer information comprises an IP (Internet Protocol) address of the registered networked printer.

1   30. (Previously Presented) A system comprising:

2   at least one host computer;

3   a plurality of network printers;

4   a network adapted to transfer data between the at least one host computer and the plurality

5   of network printers;

6   wherein the at least one host computer includes a controller, a memory operatively

7   connected to the controller, and an interface adapted to transfer data between the controller and

-18-

8   the network;

9   wherein each of the plurality of network printers include a controller, a memory operatively

10   connected to the controller, and an interface adapted to transfer data between the controller and

11   the network;

12   wherein the controller of the at least one host computer is adapted to register at least one

13   item of network print information in the memory of the at least one host computer;

14   wherein the controller of the at least one host computer is adapted to access the network

15   printer information registered in the memory of the at least one host computer in response to a

16   command for printing print-data being issued;

17   wherein the controller of the at least one host computer is adapted to transmit a request

18   command from the at least one host computer to the plurality of network printers via the interface

19   of the at least one host computer and the network and the respective interfaces of the plurality of

20   network printers requesting the networked printers to transmit standby print information to the at

21   least one host computer via the respective interfaces of the plurality of network printers and the

22   network and the interface of the at least one host computer, the controller of each respective one

23   of the plurality of network printers being adapted to determine the standby print information

24   relating to the amount of standby print operations of the respective networked printers;

25   wherein the controller of the at least one host computer is adapted to determine a

26   minimum-utilized networked printer having a lowest amount of standby print operations from

27   among the networked printers having standby print operations from the standby print information

28   transmitted from the networked printers to the at least one host computer in response to the request

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29   command; and

30   wherein the controller of the at least one host computer is adapted to transmit the print-data

31   from the at least one host computer to the network printer determined to be the minimum-utilized

32   network printer via the interface of the at least one host computer and to the network and the

33   interface of the network printer determined to be the minimum-utilized network printer.

1   31. (Previously Presented) The system of claim 30, wherein registering at least one item

2   of network print information in the memory of the at least one host computer comprises:

3   the controller of the at least one host computer determining whether a command for

4   registering network printer information in the at least one host computer has been issued;

5   the controller of the at least one host computer detecting the network printers connected

6   to the network; and

7   the controller of the at least one host computer storing the network printer information in

8   a memory of the at least one host computer.

1   32. (Previously Presented) The system of claim 31, further comprising the controller of

2   the at least one host computer being adapted to assign priority numbers to the network printer

3   information in order of detection and storing the assigning priority numbers in the memory.

1   33. (Previously Presented) The system of claim 32, wherein determining a

2   minimum-utilized networked printer by the controller of the at least one host computer comprises:

3   the controller of the at least one host computer detecting the priority numbers assigned to

4   the networked printers having the lowest amounts of standby print operations; and

5   the controller of the at least one host computer selecting a networked printer having a

6   preferential priority number as the minimum-utilized network printer.

1   34.   (Previously Presented) The system of claim 30, wherein the network printer

2   information comprises an IP (Internet Protocol) address of the registered networked printer.

1   35.   (Previously Presented) The system of claim 31, wherein the network printer

2   information comprises an IP (Internet Protocol) address of the registered networked printer.

1   36.   (Previously Presented) The system of claim 32, wherein the network printer

2   information comprises an IP (Internet Protocol) address of the registered networked printer.

1   37.   (Previously Presented) The system of claim 33, wherein the network printer

2   information comprises an IP (Internet Protocol) address of the registered networked printer.